

**AMENDMENT**

Please add new claims 110-125, corresponding to originally filed claims 18-25, 29-32 and 58-61. A clean copy of the pending claims, as amended, is provided below.

1. A method of characterizing a first molecule X and a second immobilized molecule Y in a sample of a conducting medium, said method comprising:
  - (a) providing a system comprising said immobilized second molecule Y, said conducting medium sample, and said first molecule X;
  - (b) detecting a transient electrical signal produced by a monodirectional movement of said first molecule X through said conducting medium sample relative to said immobilized second molecule Y; and
  - (c) relating said detected transient electrical signal to at least one characterizing feature of said first molecule X and said second molecule Y in said sample.
2. The method according to Claim 1, wherein said at least one characterizing feature is motion, velocity, quantity, structure, charge or binding event.
3. The method according to Claim 1, wherein said movement is a movement of X towards Y.
4. The method according to Claim 1, wherein said movement is a movement of X away from Y.
5. The method according to Claim 1, wherein said conducting medium sample is a fluid medium.
6. The method according to Claim 1, wherein said conducting medium sample is a gel or gaseous medium.
7. The method according to Claim 1, wherein said immobilized molecule Y is a polymer.
8. The method according to Claim 7, wherein said polymer is a polypeptide.
9. The method according to Claim 7, wherein said polymer is a nucleic acid.
10. The method according to Claim 1, wherein said immobilized second molecule Y is immobilized on a surface of a first working electrode.

11. The method according to Claim 10, wherein said transient electrical signal is measured using said first working electrode and a second reference electrode.
12. The method according to Claim 10, wherein said transient electrical signal is measured using a plurality of electrodes, which plurality includes said first working electrode.
13. The method according to Claim 1, wherein said transient electrical signal is a change in an electrical parameter over time.
14. The method according to Claim 13, wherein said electrical parameter is voltage.
15. The method according to Claim 13, wherein said electrical parameter is current.
16. The method according to Claim 13, wherein said electrical parameter is accumulated charge.
17. The method according to Claim 13, wherein said electrical parameter is impedance of said medium.
57. A method of detecting the occurrence of a binding event between a first molecule and an immobilized second molecule in a medium, said method comprising:
  - (a) providing a system comprising said immobilized second molecule immobilized on a surface of a working electrode and in contact with a medium comprising said first molecule;
  - (b) detecting a transient electrical signal in said medium produced by a binding event between said first molecule said immobilized second molecule; and
  - (c) relating said detected transient electrical signal to the occurrence of said binding event between said first and second molecule.

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109. 110. (New) The method according to Claim 57, wherein first and second molecules are proteins.
  110. 111. (New) The method according to Claim 57, wherein said first and second molecules are a receptor-ligand pair.
  112. (New) The method according to Claim 57, wherein said first and second molecules are an antibody-antigen pair.
  113. 114. (New) The method according to Claim 57, wherein said first and second molecules are nucleic acids.

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113.  
114. (New) A method according to Claim 1, wherein said second immobilized molecule Y is a polymer immobilized on a surface of a working electrode, said conducting medium sample is fluid medium; said transient electrical signal is measured using said first working electrode and a second reference electrode; said movement is a movement of X towards Y; and said at least one characterizing feature is a binding event between X and Y.
114.  
115. (New) The method according to Claim 114, wherein said immobilized polymer is a polypeptide.
115.  
116. (New) The method according to Claim 115, wherein said first molecule X is a polypeptide.
116.  
117. (New) The method according to Claim 114, wherein X and Y are proteins.
117.  
118. (New) The method according to Claim 117, wherein X and Y are a receptor-ligand pair.
118.  
119. (New) The method according to Claim 117, wherein X and Y are an antibody-antigen pair.
119.  
120. (New) The method according to Claim 114, wherein said immobilized polymer is a nucleic acid.
120.  
121. (New) The method according to Claim 120, wherein said first molecule X is a nucleic acid.
121.  
122. (New) The method according to Claim 120, wherein said method is a method of detecting a nucleic acid analyte in a sample.
122.  
123. (New) The method according to Claim 122, wherein said nucleic acid analyte comprises a SNP.
123.  
124. (New) The method according to Claim 122, wherein said method quantitatively determines the amount of said nucleic acid analyte in said sample.
124.  
125. (New) The method according to Claim 124, wherein said method is a method of gene expression profiling.